In the claims:

- 1. (Currently Amended) A method of characterizing a first molecule X and a second immobilized molecule Y in a sample of a conducting medium, said method comprising:
 - (a) providing a system comprising said immobilized second molecule Y, said conducting medium sample, and said first molecule X;
 - (b) detecting a transient electrical signal giving rise to a decaying waveform

 that is produced by a monodirectional movement of said first molecule X

 through said conducting medium sample relative to said immobilized

 second molecule Y; and
 - (c) relating said detected transient electrical signal to at least one characterizing feature of said first molecule X and said second molecule Y in said sample.
- 2. (Original) The method according to Claim 1, wherein said at least one characterizing feature is motion, velocity, quantity, structure, charge or binding event.
- 3. (Original) The method according to Claim 1, wherein said movement is a movement of X toward Y.
- 4. (Original) The method according to Claim 1, wherein said movement is a movement of X away from Y.
- 5. (Original) The method according to Claim 1, wherein said conducting medium sample is a fluid medium.
- 6. (Original) The method according to Claim 1, wherein said conducting medium sample is a gel or gaseous medium.

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- 7. (Original) The method according to Claim 1, wherein said immobilized molecule Y is a polymer.
- 8. (Original) The method according to Claim 7, wherein said polymer is a polypeptide.
- 9. (Original) The method according to Claim 7, wherein said polymer is a nucleic acid.
- 10. (Original) The method according to Claim 1, wherein said immobilized second molecule Y is immobilized on a surface of a first working electrode.
- 11. (Original) The method according to Claim 10, wherein said transient electrical signal is measured using said first working electrode and a second reference electrode.
- 12. (Original) The method according to Claim 10, wherein said transient electrical signal is measured using a plurality of electrodes, which plurality includes said first working electrode.
- 13. (Original) The method according to Claim 1, wherein said transient electrical signal is a change in an electrical parameter over time.
- 14. (Original) The method according to Claim 13, wherein said electrical parameter is voltage.
- 15. (Original) The method according to Claim 13, wherein said electrical parameter is current.
- 16. (Original)The method according to Claim 13, wherein said electrical parameter is accumulated charge.
- 17. (Currently Amended) The method according to Claim 13, wherein said electrical parameter is includes impedance.

18-112.(Cancelled)

- 113. (Currently Amended) A method according to Claim 1, wherein said second immobilized molecule Y is a polymer immobilized on a surface of a working electrode, said conducting medium sample is fluid medium; said transient electrical signal is voltage that is measured using said first working electrode and a second reference electrode; said movement is a movement of X towards Y; and said at least one characterizing feature is a binding event between X and Y.
- 114. (Currently Amended) The method according to Claim 114113, wherein said immobilized polymer is a polypeptide.
- 115. (Currently Amended) The method according to Claim 115114, wherein said first molecule X is a polypeptide.
- 116. (Currently Amended) The method according to Claim 114113, wherein X and Y are proteins.
- 117. (Currently Amended) The method according to Claim 117116, wherein X and Y are receptor-ligand pair.
- 118. (Currently Amended) The method according to Claim 117116, wherein X and Y are an antibody-antigen pair.
- 119. (Currently Amended) The method according to Claim 114113, wherein said immobilized polymer is a nucleic acid.
- 120. (Currently Amended) The method according to Claim 120119, wherein said first molecule X is a nucleic acid.
- 121. (Currently Amended) The method according to Claim 120119, wherein said method is a method of detecting a nucleic acid analyte in a sample.

- 122. (Currently Amended) The method according to Claim 122121, wherein said nucleic acid analyte comprises a SNP.
- 123. (Currently Amended) The method according to Claim 122121, wherein said method quantitatively determines the amount of said nucleic acid analyte in said sample.
- 124. (Currently Amended) The method according to Claim 124123, wherein said method is a method of gene expression profiling.
- 125. (New) A method of detecting the occurrence of a binding event between a first molecule and an immobilized second molecule in a medium, said method comprising:
 - (a) providing a system comprising said immobilized second molecule immobilized on a surface of a working electrode and in contact with a medium comprising said first molecule;
 - (b) detecting a transient electrical voltage giving rise to a decaying waveform in said medium that is produced by a binding event between said first molecule and said immobilized second molecule; and
 - (c) relating said detected transient electrical voltage to the occurrence of said binding event between said first and second molecule.
- 126. (New) The method according to Claim 125, wherein said first and second molecules are proteins.
- 127. (New) The method according to Claim 125, wherein said first and second molecules are a receptor-ligand pair.
- 128. (New) The method according to Claim 125, wherein said first and second molecules are an antibody-antigen pair.

- 129. (New) The method according to Claim 125, wherein said first and second molecules are nucleic acids.
- 130. (New) The method of claim 1, wherein the transient electrical signal is voltage giving rise to a waveform that decays in 1 minute to 1 millisecond.
- 131. (New) The method of claim 130, wherein the waveform decays in 5 seconds to 10 milliseconds.
- 132. (New) The method of claim 125, wherein the transient electrical voltage gives rise to a waveform that decays in 1 minute to 1 millisecond.
- 133. (New) The method of claim 132, wherein the waveform decays in 5 seconds to 10 milliseconds.